



**Report by**  
**Jefferson Lab Material Handling Safety Improvement Team**  
**February 4, 2005**

## **Introduction**

The Material Handling Safety Improvement Team consisting of Ed Foltz, John Kelly, and Neil Wilson, as chairman, was charged by the Steering Committee with improving material handling safety at Jefferson Lab. We respectfully submit this report on our observations, analysis, and recommendations to the Steering Committee, and we will be glad to respond to questions about it. The team benefited greatly from administrative support by Mary Jo Bailey from the Office of Assessment. We also express our gratitude to those who accepted our invitation to submit comments and participate in interviews.

## **Synopsis**

Based on interview comments and its own analysis, the team believes that a material-handling accident – in particular, one involving mechanized equipment – has potential outcomes as serious as with any activity at the Lab. There is a broad consensus across the Lab that material handling does not get a share of attention and resources proportional to these other potentially hazardous activities. The Team believes that there are a number of high-yield improvement opportunities – some that can be adopted immediately, and others that will require some time to implement.

## **Methods**

The team examined material handling (MH) safety at the Lab by reviewing existing MH policies and practices in the EH&S Manual (much of which is currently under revision). We also compiled incident reports and news articles about MH incidents within the larger DOE community, as well as from private industry.

Our major data-gathering effort was from interviews with on-site experts, experienced MH operators, and supervisors in various positions where material handling plays a major role. We made notes of these interviews and asked each interviewee to review the notes for accuracy. We have grouped the comments from interviews, our subsequent research, and team discussions into several major categories:

Equipment Condition & Maintenance	Storage Areas
Crane Operation	Material Handling Subcommittee
Training & Performance	Manual Material Handling
Roadway Safety	

The report addresses these in turn, prefacing each category with a synopsis of the observations, concerns, suggestions we heard and discussed. The synopses are followed by the Team's recommendations – in some cases both primary recommendations and associated secondary recommendations. In a few instances, there is yet more detail, but we have attempted to focus this report on major themes.

A ranking of recommendation priorities is included as **Appendix A**

**Appendix B** is a proposed matrix of responsibilities for material-handling-equipment fleet management.

**Appendix C** is a list of special-purpose MH equipment.

## —Equipment Condition & Maintenance—

The Team heard a near-unanimous opinion that much of JLab’s material handling equipment is decrepit, outmoded, ill-suited, and unreliable. Equipment storage is make-shift and often competes for space inside buildings or areas that have other, incompatible purposes. Some equipment is kept outdoors which contributes to its wear and tear.

There currently are no standardized, practical, or sustainable maintenance plans for much of this equipment. From the perspective of the ordinary operator of JLab MH equipment, the certainty, thoroughness, and timeliness of repairs is an open question. Broken equipment sits idle, though in some cases, its operational status is unclear. For example, JLab currently has 17 forklifts on site, six of which should be removed immediately from service, as they are considered unsafe by the general operator population.



Among the man-lifts on site, two are considered by some as unsafe and, and it appears to some they have not been repaired for at least six months.

Operators do not consistently perform pre-operational checks, in part because checklists are not at hand. The same holds

true for engine oil, other lubricants, and compressed air for tires; these things are not readily available. Uneven or inadequate maintenance may also be a motivator for groups to procure their “own” equipment and resist putting it into the community-equipment pool.

Combined, these factors appear to foster a perception that MH equipment operation is not viewed by Lab leadership as an important activity and vital asset – that MH safety is often taken for granted. In fact, the skills and techniques of MH operation predict safety outcomes to as great a degree as any activity at JLab.

### Recommendation 1:

The inherent problems resulting from the present system of distributed ownership would be best cured by single-point management of the MH “fleet.” The team recommends assigning all community<sup>1</sup> motorized material-handling equipment to Facilities Management which would manage the MH pool equipment. Among the Lab departments and groups, they are most attuned to preventive and predictive maintenance systems, and life-cycle-based equipment replacement. They have resources in place for accepting service requests, translating those into work orders,

<sup>1</sup>–*Community Equipment*: Motorized MH equipment that is normally available for use by any Lab group: “pool” equipment

and tracking them to closure. In addition Facilities Management is already managing the motor vehicle fleet, and this new activity would be a logical fit.

**The team believes the following are important elements of Recommendation 1.**

- A. Provide Facilities Management with a budget line item for maintenance and repair of equipment to industry standards. Logically, this should be no less than the aggregate maintenance costs for MH equipment at present, and it should include anticipated equipment replacement.
- B. This transfer of MH maintenance responsibility should be accompanied by a significant portion of an FTE. This person's core responsibilities include performing manufacturers' recommended routine and preventive maintenance of community equipment. Other duties would logically include:
  - i. The primary contact person for maintenance and repairs for groups that own their own motorized material handling equipment.
  - ii. Order and store supplies necessary for on-site maintenance and repair including fuel, oil, filters, grease, etc.
  - iii. Maintain maintenance records for all motorized material handling equipment on-site and provide reminders for maintenance to departments who own their own equipment.
  - iv. Advise management on replacement of existing equipment that is becoming costly to operate and/or unreliable.
  - v. Incorporate motorized material handling equipment maintenance requests into the "work order" system. Have "Tag-Out" tickets available and a centralized location for repair and maintenance of equipment.
  - vi. Institute, publicize, and maintain a process such that when defects are observed by an operator, the equipment is tagged out of service, and a service request is submitted.

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**Recommendation 2:**

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Construct a facility with a roof, with storage for supplies and equipment for MH equipment maintenance, including fuel, oil, air compressor, old oil storage/disposal, cleaning supplies, etc. It need not be elaborate, but should be large enough for all the forklifts to be stored. This facility would be managed by Facilities Management as an adjunct to their role described in Recommendation 1.

**Recommendation 3:**

The team recommends that JLab evaluate all of its motorized MH community equipment, surplus what is not up to standards, develop a reconditioning/replacement plan, and, when cost-effective, enter into long-term lease/rental agreements to replace the surplus equipment. Facilities Management would be responsible for the maintenance of these contracts and would provide the SOTR and administrative support. This person would also be the primary contact when specialty equipment was required for short-term MH equipment needs that could be met by weekly or monthly rentals.

***Informal Cost Analysis:***

Currently JLab is spending approximately \$24,000 per year (averaged over the last two years) for repair and maintenance of motorized material handling equipment. Based upon some informal conversations with local MH vendors, it appears that rental/lease arrangements could be made with a local company to serve the long and short term needs of the Lab.

11000# load capacity diesel, similar to the new Hyster	\$9288/yr for 7 years
8000# cap. diesel, similar to the new Hyster-	\$8328/yr for 7 years
5000# cap. electric with 15.75' lift	\$6036/yr for 7 years
5000# cap. electric with 20' lift	\$6456/yr for 7 years
4000# cap. 3-wheel electric with 15.75 lift (high maneuverability design)	\$6012/yr for 7 years

These prices include a maintenance plan & warranty that covers everything except damage and tires. It also gives the Lab the option to upgrade when a piece of equipment becomes obsolete or no longer meets our needs.

**Recommendation 4:**

Provide an equipment-specific daily maintenance checklist and attach it to the motorized MH equipment. This operational check is required whenever an individual uses a piece of equipment. It includes the manufacturer's recommendation for items such as tire-pressure, operational horn and back up beeper, oil levels and pressures within normal range, forks move up and down, boom rotates correctly, etc. Lists could be simple luggage-tag size and attached to the steering wheel column or key chain.

## — Training, Certification, & Performance—

### **Material Handling Training**

The majority of interviewees indicated that the JLab MH training they received was adequate as a base training. However, almost all thought there should be more content, – in particular, more hands-on training for proficiency.

#### **Recommendation 5:**

Develop and provide the following courses:

- **“How to Perform Maintenance on Equipment.”** This would include daily maintenance checklists, where and how to perform minor repairs such as topping off fluids, increasing tire pressure, and what to do if major repairs are necessary. This training should be included in the basic forklift and crane training courses.
- **“Basic, Specific, and Master Rigging Training”** Rigging skills are often intertwined with MH equipment operation. This type of course has been offered by an outside consultant and brought on site by the Physics Division a couple of times now. It is very well received and should be done on a lab-wide basis to fulfill the requirements of Journeyman as defined later in this report.
- **“Forklift Operator – Practical”** Once every five years require a practical test of all forklift operators. Set up an obstacle course with various loads and have all operators go through the paces to demonstrate proficiency. This would include daily maintenance checklists, where and how to perform minor repairs such as topping off fluids, increasing tire pressure, and what to do if major repairs are necessary.
- **“Manual Lifting Course”** Provide a course for manual lifting devices such as manual forklift, dollies, and carts so people are aware of their availability and how to use them. It should also include at least the basic ergonomic principles as they apply to moving/lifting/manipulation of material and equipment.

All MH training should discuss the need, selection, and expectations for use of personal protective equipment suited to the tasks: eyewear, gloves, safety footwear, etc.

### **Crane Operator Certification**

It is estimated that JLab has over 180 “certified” crane<sup>2</sup> operators, a sample of whom were interviewed by the team. Of these several commented that they did not consider themselves qualified to operate all of the cranes on site. Others felt they were qualified to operate only the one crane in their area, and would not consent to operating any of the others. The common theme is a perception that JLab’s present approach to deeming a person “certified” does not

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<sup>2</sup>-For the purposes of this report, “cranes” means all motor-assisted and manual lifting devices.

specifically state that area- or equipment-specific familiarization is needed – certainly in the case of the motorized cranes.

The reasons vary as to why individuals have Crane Operation on their ITPs. Some supervisors want everyone in their group to have crane training and this is the only way it is offered. Others are supervisors themselves who want to have some idea of what their crane operators are doing. This is considered a detriment to safety as it dilutes the qualifications of the actual crane operators, and it is a tacit acknowledgement that the crane training presently offered is considered to be on the level of a safety training course and not a “certification” for operation.

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**Recommendation 6:**

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The team recommends three levels of training for crane operators.

- **Apprentice:** An apprentice could not operate a crane without the direct supervision of a Journeyman. Apprentice training would have to be reviewed each year to retain this status. Current training classes would be sufficient to reach this level.
- **Journeyman:** Additional training would be required including rigging training and hands-on training on their “primary-use” crane. A Journeyman would be qualified to perform “routine” lifts on primary cranes without supervision. He or she would be qualified to do non-routine lifts on primary crane and routine lifts on other cranes under the direct supervision of a Master Operator. Journeyman status would revert to Apprentice after one-year of non-use.
- **Master:** Completed hands-on training on all types of cranes on site, and has completed master rigging training. A Master Operator has “off-site” certification of crane operations from a reputable training provider. Master’s status would revert to journeyman after a specified number of years of non-use.

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**Recommendation 7:**

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To complement the preceding, the team advocates a new Material Handling Equipment Operator License, one side would note general certifications via the completion of JLab courses. The opposite side would provide spaces for system owners to authorize operation of specific pieces of MH equipment (e.g. an experimental hall pivot crane).

These would be wallet-size, made of durable material, and carried by the operator when using the equipment.




 <b>Material Handling Equipment Operator Certification</b>				<b>Area or Equipment-Specific Authorizations for Material Handling Operators</b>			
Name _____		Div & Group _____		Area	Equipment	Authorized By	Exp. Date
Type of Equipment	Level *	Certified By	Exp. Date				
_____	_____	_____	_____				
_____	_____	_____	_____				
_____	_____	_____	_____				
_____	_____	_____	_____				
_____	_____	_____	_____				
* A –Apprentice	J –Journeyman	M –Master	NA				

Fig. 1 Example of a 2-sided certification card.

## Performance

Material handling of all types is absolutely essential for the Lab. Acquiring and maintaining JLab MH certification and proficiency is a significant investment in time. Implicit in these credentials is that they are important to job performance, and material handling is a vivid case of technical proficiency underpinning safety. As such, material-handling aspects of a position are legitimate – perhaps necessary – elements on performance appraisals.

### Recommendation 8:

MH equipment operators need job-specific MH objectives in their performance appraisals. The team recommends that Human Resources collaborate in the development of succinct and clear language that can be used by as many groups as possible. It is logical that supervisors of MH equipment operators should also have expectations from their managers that encourage supervisors to monitor their staff's MH performance, their training, and certification.

### —Material Storage—

This team was reminded in most of the interviews of the lack of storage space at the Lab and often poor use of the space that is available. Based on these comments and the team's own experiences, it seems that poorly used and inadequate storage – while a problem in its own right – often imposes a penalty on material handling. Efficiency and safety are both compromised. We heard and discussed the following aspects:





- **Handling Fatigue:** The more you have to move something – mere repetition – increases the risk of a lifting injury.
- **Loss/Damage of Property:** The more you move something, the greater chance of it being misplaced or damaged.
- **Time Constraints:** Jobs take longer because items have to be moved to get at the thing you want. As an example, consider the situation where a forklift is stored inside a building: Items (perhaps other forklifts) have to be moved to extricate the forklift. Then the removed items must be replaced while the actual forklift task is performed. Then they must be moved again to put the forklift away, and, finally, put back in the original manner. This is causing frustration, rushing, and increases the risk of an injury or property damage.
- **Deterioration of Facilities:** In particular, this relates to the transportainers on site. Transportainers have been, and are being, used for long-term storage and work facilities, and all are in some degree of deterioration.



Forklift storage area with routine assortment of other material & equipment

### Recommendation 9:

The team recommends that much greater management attention be directed to general housekeeping and storage. Loading areas need to be cleared of material and equipment that has no near-term use. This should commence with a Lab-wide campaign to label all items in loading areas with the name of the owner, a contact number, the date first put there, and the anticipated date of removal. Anything not labeled is fair game to be disposed of at the discretion of the facility owner/safety warden/building manager etc. in accordance with property management practices.

### Recommendation 10:

Off-site storage has all of the conventional storage problems aggravated by the distance from resources when needed (people and MH equipment). These areas become cluttered and disorganized unless there is a person who has jurisdiction over all the contents. The team believes there are economic and practical benefits to decreasing reliance on such areas, and it recommends the Lab commit to a plan and funding for the replacement of off-site storage facilities.

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**Recommendation 11:**

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There are insufficient technical work areas on site for safe and efficient fabrication and maintenance. This increases the reliance upon, and challenges to, safe and efficient material handling. The team recommends the Lab commit to a plan and funding for additional assembly and fabrication areas.

### **—Sustained Support for Material Handling—**

During discussions and interviews it became obvious to the team that, for many people at the Lab, there was no obvious way to take advantage of the considerable material-handling expertise around the Lab. Interview questions included “Who would you go to for material handling information?” The variety of answers received was surprising. Each division and department has its own working system, but effort is duplicated, lessons-learned are not shared, and there is an undercurrent of unproductive rivalry between departments.

Some of the causes for these problems:

- **Lack of Agreed-Upon Standards.** Nobody wants to share their equipment because they feel someone else will not take care of it, and will return it broken. This sentiment relates to the poor condition of the community equipment.
- **Lack of Equipment.** The community equipment is considered unsafe and unreliable. No one is in charge of routine and daily maintenance, and the fleet is aging and deteriorating to a point where no one will use certain equipment because it is in such poor condition.
- **Lack of Communication.** It goes against human nature to self-proclaim errors and poor performance. Lessons learned are not relayed because there is no method at present that allows these lessons to be propagated without “shooting the wounded’s reputation.”

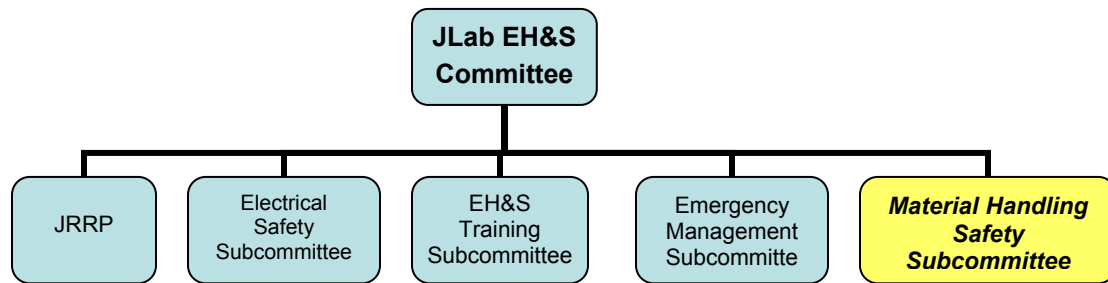
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**Recommendation 12:**

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#### ***Institute a Material Handling Subcommittee***

Aspects of JLab operations that have a significant safety profile are guided by a topically-focused subcommittee to the JLab EH&S Committee: Electrical Safety, Radiation Review Panel, EH&S training, Policy and Manuals, and Emergency Management. Objectives of all of these working groups include evaluating issues from a Lab-wide perspective, interpreting new requirements, transmitting lessons-learned, and serving as an “honest broker” for all affected parties to contribute in improvements to policy and practices.



Given the heavy reliance the Lab has on material handling, and the potential risk posed by sub-standard practices, the team concludes that material handling also merits this level of attention.

Suggested membership includes one or more Master-level equipment operators, managers whose operations are directly affected by MH equipment operations, person(s) involved with maintaining and inspecting equipment, an EH&S professional. The team recommends that most members serve a fixed term, replaced with a new member with similar MH involvement.

The subcommittee's charge might read something like this:

*The Jefferson Lab Material Handling Subcommittee advises material-handling operators and management on matters of material handling safety. The subcommittee reviews, comments on, and recommends approval of documentation for signature by the Lab Director and Associate Directors as applicable, thereby establishing policy and procedures for Jefferson Lab operational material handling safety.*

***The Jefferson Lab Material Handling Subcommittee is responsible for:***

*Reviewing lift plans and outcomes to determine best practices and to improve future activities.*

*Conducting critiques on deficiencies and proficiencies in material handling activities.*

*Reviewing plans for first-time or infrequent activities and changes of scope.*

*Reviewing recommendations from the material handling apprentices, journeymen, and trainers.*

*Recommending outside/in-house training and monitoring its effectiveness.*

*Making recommendations to senior management and to those responsible for conducting the actual programs regarding the above topics.*

*The Jefferson Lab Material Handling Subcommittee meets on a quarterly basis or as needed. The vice-chair ensures that minutes of the meetings are recorded and forwarded to the Chairperson of the Jefferson Lab EH&S Committee."*

## **—Roadway Safety—**

In several interviews it was mentioned that forklifts traveling on the roadway encounter uneven pavement, and potholes which unbalances their load and increases the hazard of operation.

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### **Recommendation 13:**

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The team recommends that the roadways on site traveled by motorized and material handling vehicles be evaluated, repaved or painted, and install sidewalks in the high traffic areas to improve safety and ease of operation.



# Appendix A

## Recommendations

### Recommendation Priorities

#### Priority One

*(Highest: Essential, greatest need, prerequisite for other actions that follow)*

Recommendation 1   Recommendation 2  
Recommendation 3   Recommendation 9  
Recommendation 12

#### Priority Two

*(Necessary, though may require prior implementation of other actions, or should be shaped by new MH Safety Subcommittee)*

Recommendation 4   Recommendation 5  
Recommendation 8   Recommendation 11

#### Priority Three

*(Also necessary, but requires long-term implementation and Subcommittee oversight.)*

Recommendation 6   Recommendation 7  
Recommendation 10   Recommendation 13



**Recommendation Details:****PRIORITY ONE**

**Recommendation 1:** Assign all community<sup>3</sup> motorized material-handling equipment to Facilities Management which would manage the MH pool equipment.

- A. Provide Facilities Management with a budget line item for maintenance and repair of equipment to industry standards.
- B. This transfer of MH maintenance responsibility should be accompanied by a significant portion of an FTE. This person's core responsibilities would include
  - i. Performing manufacturers' recommended routine and preventive maintenance of community equipment.
  - ii. The primary contact person for maintenance and repairs for groups that own their own motorized material-handling equipment.
  - iii. Order and store supplies necessary for on-site maintenance and repair including fuel, oil, filters, grease, etc.
  - iv. Maintain maintenance records for all motorized material-handling equipment on-site and provide reminders for maintenance to departments who own their own equipment.
  - v. Advise management on replacement of existing equipment that is becoming costly to operate and/or unreliable.
  - vi. Incorporate motorized material-handling equipment maintenance requests into the "work order" system. Have "Tag-Out" tickets available and a centralized location for repair and maintenance of equipment.
  - vii. Institute, publicize, and maintain a process such that when defects are observed by an operator, the equipment is tagged out of service, and a service request is submitted.

**Recommendation 2:** Construct a facility with a roof, with storage for supplies and equipment for MH equipment maintenance, including fuel, oil, air compressor, old oil storage/disposal, cleaning supplies, etc. This facility should be large enough for all the forklifts to be stored. This facility would be managed by Facilities Management as an adjunct to their role described in Recommendation 1.

**Recommendation 3:** The team recommends that JLab evaluate all of its motorized MH community equipment, surplus what is not up to standards, develop a reconditioning/replacement plan, and, enter into long-term lease/rental agreements to replace the surplus equipment. Facilities Management would be responsible for the maintenance of these contracts and would provide the SOTR and administrative support.

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<sup>3</sup> *Community Equipment:* Motorized MH equipment that is normally available for use by any Lab group: "pool" equipment

**Recommendation 9:** The team recommends that much greater management attention be directed to general housekeeping and storage. Loading areas need to be cleared of material and equipment that has no near-term use. This should commence with a Lab-wide campaign to label all items in loading areas with the name of the owner, a contact number, the date first put into the area, and the anticipated date of removal. Anything not labeled is fair game to be disposed of at the discretion of the facility owner/safety warden/building manager etc. in accordance with property management practices.

**Recommendation 12:** Institute a Material-handling Subcommittee. Aspects of JLab operations that have a significant safety profile are guided by a topically-focused subcommittee to the JLab EH&S Committee. Objectives of all of these working groups include evaluating issues from a Lab-wide perspective, interpreting new requirements, transmitting lessons-learned, and serving as an “honest broker” for all affected parties to contribute in improvements to policy and practices.

The team recommends that two people from each division be selected for membership. We further recommend following individuals as initial members of the subcommittee.

- |  |   |
|--|---|
| • Ed Folts – Physics                   | • Kris Burrows – (MH Pool Manager)      |
| • Doug Tilles - Physics                | Administration                          |
| • Neil Wilson – (Chairman) Accelerator | • Ned Walker – Subject Matter Expert    |
| • John Hogan – SRF Accelerator         | • Manny Nevarez – Subject Matter Expert |

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## PRIORITY TWO

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**Recommendation 4:** Provide an equipment-specific daily maintenance checklist and attach it to the motorized MH equipment. Lists could be simple luggage-tag size and attached to the steering wheel column or key chain.

**Recommendation 5:** Develop and provide the following courses:

- **“How to Perform Maintenance on Equipment.”** This would include daily maintenance checklists, where and how to perform minor repairs such as topping off fluids, increasing tire pressure, and what to do if major repairs are necessary. This training should be included in the basic forklift and crane training courses.
- **“Basic, Specific, and Master Rigging Training”** Rigging skills are often intertwined with MH equipment operation. This type of course has been offered by an outside consultant and brought on site by the Physics Division a couple of times now. It is very well received and should be done on a lab-wide basis to fulfill the requirements of Journeyman as defined later in this report.
- **“Forklift Operator – Practical”** Once every five years require a practical test of all forklift operators. Set up an obstacle course with various loads and have all operators go through the paces to demonstrate proficiency. This would include daily maintenance checklists, where and how to perform minor repairs such as topping off fluids, increasing tire pressure, and what to do if major repairs are necessary.

- **“Manual Lifting Course”** Provide a course for manual lifting devices such as manual forklift, dollies, and carts so people are aware of their availability and how to use them. It should also include at least the basic ergonomic principles as they apply to moving/lifting/manipulation of material and equipment.

**Recommendation 8:** MH equipment operators need job-specific MH objectives in their performance appraisals. The team recommends that Human Resources collaborate in the development of succinct and clear language that can be used by as many groups as possible. It is logical that supervisors of MH equipment operators should also have expectations from their managers that encourage supervisors to monitor their staff’s MH performance, their training, and certification. *{The Team recommends that the new MH Subcommittee take up this item as part of its early agenda.}*

**Recommendation 11:** There are insufficient technical work areas on site for safe and efficient fabrication and maintenance. This increases the reliance upon, and challenges to, safe and efficient material-handling. The team recommends the Lab commit to a plan and funding for additional assembly and fabrication areas.

### PRIORITY THREE

**Recommendation 6:** The team recommends three levels of training for crane operators.

- **Apprentice:** An apprentice could not operate a crane without the direct supervision of a Journeyman. Apprentice training would have to be reviewed each year to retain this status. Current training classes would be sufficient to reach this level.
- **Journeyman:** Additional training would be required including rigging training and hands-on training on their “primary-use” crane. A Journeyman would be qualified to perform “routine” lifts on primary cranes without supervision. He or she would be qualified to do non-routine lifts on primary crane and routine lifts on other cranes under the direct supervision of a Master Operator. Journeyman status would revert to Apprentice after one-year of non-use.
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**Recommendation 7:** To complement the preceding, the team advocates a new Material-handling Equipment Operator License, one side of which would note general certifications via the completion of Lab course completion. The opposite side would have spaces for sign-off by system owners for authorization to operate specific pieces of MH equipment (e.g. an experimental hall pivot crane).

**Recommendation 10:** Off-site storage has all of the conventional storage problems aggravated by the distance from resources when needed (people and MH equipment). The team believes there are economic and practical benefits to decreasing reliance on such areas, and it recommends the Lab commit to a plan and funding for the replacement of off-site storage facilities.

**Recommendation 13:** The team recommends that the roadways on site traveled by motorized and material-handling vehicles be evaluated, repaved or painted, and install sidewalks in the high traffic areas to improve safety and ease of operation.

## Appendix B

### Material Handling Equipment – Fleet-Management Aspects

	Pool Equipment	Special-Use Equipment
<b>Owner</b>	Facilities Management	Purchaser
<b>Permanent Location</b>	Proposed MH equipment “shed” for pool equipment	Purchaser’s designated location for specialized equipment
<b>Sign-Out</b> <i>Who?</i>	Anyone with authorization <sup>(1)</sup> for pool equipment	Regular authorization plus that of owner for specialized equipment and designated areas (i.e. experimental halls)
<i>How long?</i>	Duration of task at hand for pool equipment	“Permanent” sign-out for authorized groups <sup>(2)</sup>
<b>Maintenance Responsibility</b>	Facilities Management	Owner through FM
<b>Inspection Responsibility</b>	Facilities Management	Owner with FM assistance as required
<b>Replacement, Purchase, Lease Decisions</b>	Facilities Management	Owner in consultation with FM for specialized equipment.

<sup>(1)</sup> General training, equipment-specific & area-specific training, supervisory approval, and FM approval.

<sup>(2)</sup> Equipment is available for others’ use when not needed for its primary purposes

**Special-Purpose or “Group-Owned” Material Handling Equipment**

*{Note: This list is based upon the best available information available at the time it was compiled. Subsequent additions and corrections may be needed}*

**MH equipment that will be “owned” by Administration Division:**Property Management

Bendi Forklift at Blue Crab Road warehouse Fxxxxxx

**MH equipment that will be “owned” by Accelerator Division:**Cryogenics Group

Clark 8000# forklift F25414

Installation/Vacuum Group

Clarke TM20 F25564

Atlet Sideloader F26597

**MH equipment that will be “owned” by Physics Division:**Hall A

Man lift F26838

Clark Forklift F213659

Scissor lift F26655

Trailer F212129

Managed by: Ed Folts

Hall B

Man lift F213596

Man lift F219605

Man lift F213962

Genie

New JLG lift F215530

JLG Single man F2-1329

Trailer F25428

Managed by: Doug Tilles

Hall C

Man lift electric JLG 60' F213977

Manlift vertical JLG 1 man F214121

Manlift boom lift JLG 45' F214170

Boom man lift Grove 45' F213910

Scissor lift Grove F26359

Scissor lift Skyjack F212372

Forklift Hyster F213959

Forklift Toyota F214107

Truck-trailer jockey F214109

Trailer Mini F212905

Trailer wagon F212904

Trailer 60400 lb F215526

Trailer 20000 lb F212638

Managed by: Walter Kellner

**Pool Equipment:**

All Material Handling equipment at the Jefferson Lab not identified being “Owned” and managed by a particular group will be considered “Pool” equipment and will be managed by Kris Burrows, Facilities Management, Admin Division.